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SUBJECT: Safety in South African Mines - a Moral Imperative

(SBU) SUMMARY: Persistent fatalities in South African mines (increasing to 221 in 2007 from 199 in the prior year) have galvanized industry, government, and labor into taking a harder look at the way safety is communicated and implemented on mines. Both Anglo American and Gold Fields, the third and fourth largest gold producers in the world, have identified safety as top priority and sine qua non for engaging in mining. A conference on Safety in Deep Mining was organized by Mining Review Africa to highlight safety issues and open discussion on causes and possible solutions to the problem. Minerals and Energy Resources Specialist moderated a panel discussion on safety governance and chaired a session on safety education and management. Presentations and discussions covered most aspects of mine safety, including technology, and industry and government roles in safety research, legislation and governance. The major consideration revolved around human factors in safety, namely culture and attitude as the determinants of behavior, and how senior executive commitment was essential in modifying behavior. End Summary.

Safety - Moral License to Mine

12. (SBU) Recent dismissals of a number of senior mining executives for non-performance on safety issues, closure of mines by the Department of Minerals and Energy (DME) following fatal accidents, and labor action protesting unsafe and unhealthy working conditions have cost South African mines hundreds of millions of dollars in lost production and export earnings over the past year. These issues have focused industry's attention on the imperative for a more wide-ranging, innovative and pro-active approach to mine safety and health matters. Health - represented as HIV/AIDS, TB and Silicosis - and recurring power outages have a significant negative impact on mine safety. Technical and human safety issues were addressed by the Mining Review Africa Conference on Safety in Deep Mining, held July 16-17 in Johannesburg, the hub of South Africa's mining industry. The conference attracted 84 attendees from four countries and presentations were made by major South African gold and platinum mining companies as well as by Barrick Gold of Canada, the biggest gold producer in the world.

Mining Safety Challenge

13. (SBU) Safety has been a long-standing focus of South Africa's

mining industry because most of the operations are underground and all mines are being compelled to go deeper. A number of gold mines are reaching depths of 4,000 meters and plan to go to 5,000 meters should the economics prove viable. Platinum mines are planning to go to 2,500 meters in the future. Increased depth requires better mine planning and rock engineering, increased ventilation and cooling, higher levels of technology and skills, and increased power for rock haulage, pumping water, and to provide an acceptable working environment. Increased depth also induces seismic events around the mine, which are generally of low intensity but sufficient Qaround the mine, which are generally of low intensity but sufficient to trigger rock falls in working places. Mine statistics show that 70% of fatalities are caused by falls of rock from the roof (hanging), but most are not related to seismic activity, which generally occurs within a few hours of blasting and in-between shift changes.

Modernizing Mining Safety

14. (SBU) A conference keynote address was presented by the Chief Inspector of Mines Thabo Gazi who gave a historical review of South Africa's mining industry and the role it has played in the industrial and socio-economic development and urbanization of the country, despite its roots in white-only exclusivity. He emphasized mining's ability to mobilize capital, provide employment and training, and earn foreign currency as major benefits. Gazi drew attention to the fact that fatalities had decreased from 1,000 in 1987 to 212 in 2007, but stated that any deaths were unacceptable. He said that mine deaths hampered government's initiatives on poverty alleviation and promoted the flight of skills and capital

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from the industry. They also had an economic and social impact and created a negative image of South African mining. Gazi identified the challenges facing the mining industry as being:

- -- attracting and training skills;
- -- acquiring new technologies and models in rock engineering, backfill, explosives, ventilation and cooling;
- -- addressing pollution and emissions;
- -- combating HIV/AIDS and associated diseases; and
- -- assuring appropriate mine design.

Gazi stressed that safety was the "moral license to mine" and that best practices must be employed in all situations.

Safety Governance Challenges

- 15. (SBU) The panel on safety governance engaged panelists and attendees in debate on the major issues, causes, failings, and possible solutions to the present safety situation on South African mines. All agreed that working conditions in South African mines are unique in that mines employ large numbers of unskilled labor who work in fairly arduous conditions of heat, humidity and limited space, using heavy equipment. The panel also recognized that safety was the collective responsibility of all stakeholders and required a bi-partisan and multi-disciplinary approach involving labor, management, government and individual awareness and empowerment. also required action by way of research, sound and effective government policy, problem-centered regulation and oversight, and the commitment and leadership of executive mine management. Australia was cited as producing industry-coordinated and cooperative research in safety despite a small government budget. South Africa had a relatively bigger research budget but failed in these areas because industry research organizations such as COMRO (Chamber of Mines Research Organization) had been disbanded in favor of company-specific research.
- 16. (SBU) Speakers dealt with technology and technical aspects of safety, including essential visibility of miners and machinery using strobe lights and sensors, communication equipment and safe-places, and respiratory and rescue equipment. A major issue for South African mines is the ability to arrest the free-fall of run-away ore-skips and man-conveyances (cages). These have caused major

accidents in which many lives have been lost and extensive damage to mine shafts and installations. Prevention though regular inspection and maintenance of transportation systems is the only real solution because physical methods are limited, depending on the weight and speed of a skip or cage. The issue of declining skills in the industry was identified as a key contributor to accidents, specifically in regard to the monitoring, maintenance and use of equipment and machinery. Much of this was blamed on government's labor and black economic empowerment policies that have caused the employment of inexperienced people in skilled jobs, and the emigration of skills to Australia and Canada.

New Leadership Commitment

 $\P7$. (SBU) Most presentations dealt with human factors as the major Q7. (SBU) Most presentations dealt with human factors as the major cause of and impediment to the reduction or elimination of mine accidents. A provocative keynote address by Barrick's Vice President for Health and Safety Don Ritz highlighted the essential leadership role of senior mine executives in reducing accidents. He emphasized that safety programs and systems were essential tools in reducing accidents, but that a company had to go beyond these to cut accidents to zero. This could only be done if executives were committed and visibly involved in safety. "I must be the change I wish to see in others", he quoted from Gandhi. Ritz said that Barrick's CEO had accompanied him on a health and safety inspection and promotion tour to all the companies 27 mines and that many of these mines had not had a fatal accident in years. Others had fairly high accident rates and there was a direct correlation between executive commitment and accident frequency. He also showed that there was a huge return on investment in safety, of the order of 8/1.

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- 18. (SBU) Other speakers presented information and statistics showing that most accidents:
- -- occur in "safe" areas;
- -- are due to non-compliance by everyone from executives to miners and operators; and
- -- are due overwhelmingly to human factors and conditions.

Human factors include:

- -- wellness;
- -- lack of experience and skills;
- -- attitude to safety;
- -- culture;
- -- production bonus systems;
- -- working environment; and
- -- non-empowerment of miners to make safety decisions. The incidence of HIV/AIDS among South African miners ranges from 25-40%, an unreliable figure because only voluntary testing is legally allowed. Miners infected by the HIV virus are extremely susceptible to TB and silicosis and tend to hide their illnesses until their condition becomes obvious. This has a major impact on their safety compliance. Presenters also qualified behavior toward safety as a combination of attitude and culture. Culture and attitude are very difficult to change, but behavior can be modified by constant training and the leadership of senior management.

Comment

¶9. (SBU) Safety awareness and training have always been a priority in South Africa's mines, particularly the gold mines. During the 1980's and 1990's most mines were battling to maintain profit margins and it is certainly possible that some safety "corners" were cut to increase production. The arrival of the gold boom around 2005 increased pressure to manage ballooning costs and maintain margins. The advent of Anglo American's new CEO Cynthia Carroll with her focus on safety, the DME's mine closure policy, and labor actions have all focused executive attention on the imperative for

new thinking and technology to be applied to safety and accident prevention. Mining fatalities in South Africa have been reduced by almost a factor of five from about 1000 in 1987, but that isn't good enough.

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